

JC13 Rec'd PCT/PTO 19 MAR 2002

UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner:                      Group:                      Attorney Docket # 2056

Applicant(s) : POLLNER, R.

Serial No. :

Filed :

For : SPARK PLUG FOR AN INTERNAL COMBUSTION  
ENGINE, AND METHOD FOR PRODUCING A SPARK  
PLUG

## SIMULTANEOUS AMENDMENT

March 19, 2002

Honorable Commissioner of Patents and Trademarks  
Washington, D.C. 20231

S I R S:

Simultaneously with filing of the above identified application  
please amend the same as follows:

In the Claims:

Cancel all claims without prejudice.

Substitute the claims attached hereto.

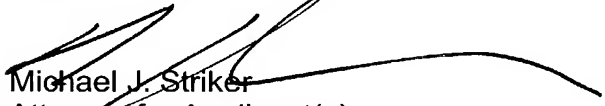
## REMARKS:

This Amendment is submitted simultaneously with filing of the above identified  
application.With the present Amendment applicant has amended the claims so as to eliminate  
their multiple dependency.

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Consideration and allowance of the present application is most respectfully requested.

Respectfully submitted,



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What is claimed is:

1. A spark plug for an internal combustion engine, comprising a shell (12), an insulator (16) located in the shell and composed of a sintered ceramic material, as well as a center electrode (18) heat-fused in an insulator, and a terminal stud (22) that have an electrically conductive connection with each other and are located in the insulator, wherein a cermet (28) abuts the center electrode, the ceramic phase of which is composed of the same or a similar material as the insulator, and the metallic phase of which is composed of a material having good electrical conductivity.
2. The spark plug according to Claim 1, wherein the ceramic phase is composed of  $\text{Al}_2\text{O}_3$ .
3. The spark plug according to Claim 2, wherein the ceramic phase comprises sintering auxiliary agents.
4. The spark plug according to [one of the preceding claims] Claim 1, wherein the metallic phase is composed of a metal from the platinum group that is stable at sintering temperature.
5. The spark plug according to Claim 4, wherein the metallic phase is composed of platinum or a platinum alloy.
6. The spark plug according to [one of the preceding claims] Claim 1, wherein a ceramic granulated material is used to produce the cermet (28), the granules of which are provided with a surface coating of the material having good electrical conductivity.
7. The spark plug according to Claim 6,

wherein the granulated material has a granule size in the range between 90  $\mu\text{m}$  and 150  $\mu\text{m}$ .

8. The spark plug according to [Claims 6 and 7] Claim 6, wherein the material having good electrical conductivity is pulverized, and the individual particles are less than 10  $\mu\text{m}$  in size.
9. The spark plug according to [one of the preceding claims] Claim 1, wherein the metallic phase of the cermet constitutes a quantity between 10 and 15 % by volume.
10. The spark plug according to [one of the preceding claims] Claim 1, wherein the center electrode (18) has a diameter between 0.3 mm and 0.8 mm.
11. The spark plug according to [one of the preceding claims] Claim 1, wherein a burn-off resistor (30) is located in the interior of the insulator, the conductive phase of which is composed of carbon.
12. A method for producing a spark plug using the following steps:
  - a ceramic material is pressed to form an insulator (16) that is provided with a location hole (36) for a center electrode;
  - a center electrode (18) is inserted in the location hole;
  - a ceramic granulated material, the granules of which are provided with a coating of a material having good electrical conductivity, is filled in the insulator and compacted;
  - the insulator is sintered.
13. The method according to Claim 12, wherein  $\text{Al}_2\text{O}_3$  is used as the ceramic material.
14. The method according to Claim 13,

wherein sintering auxiliary agents are used.

15. The method according to [one of the Claims 13 and 14] Claim 13, wherein  $\text{Al}_2\text{O}_3$  is used as the material for the insulator.

16. The method according to [one of the Claims 12 through 15] Claim 12, wherein a metal from the platinum group that is stable at sintering temperature is used as the material having good electrical conductivity.

17. The method according to Claim 16, wherein platinum or a platinum alloy is used as the material having good electrical conductivity.

18. The method according to [one of the Claims 12 through 17] Claim 12, wherein the granules of the ceramic granulated material are coated with the material having good electrical conductivity by stirring in a diluted suspension.

19. The method according to [one of the Claims 12 through 17] Claim 12, wherein the material having good electrical conductivity is applied to the granules of the granulated material using a binding agent.

20. The method according to Claim 19, wherein the binding agent is an organic binding agent.

21. The method according to [one of the Claims 12 through 17] Claim 12, wherein the material having good electrical conductivity is applied to the granules of the granulated material via vapour deposition.

22. The method according to [one of the Claims 12 through 17] Claim 12, wherein the material having good electrical conductivity is applied to the granules of the granulated material via sputtering.